BARRIERS FOR POLYMER-COATED IMPLANTABLE MEDICAL DEVICES AND METHODS FOR MAKING THE SAME

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Abstract of the Disclosure

An implantable medical device and methods for making the implantable medical device are disclosed. The implantable medical device includes a substrate. At least a portion of the substrate is coated with a first layer including a polymer containing a drug. A barrier overlies the first layer. The barrier significantly reduces the rate of release of the drug from the polymer, thereby sustaining release of the drug from the medical device for a longer time.

The barrier may be a homogeneous layer overlying the first layer, or a number of discrete deposits over the first layer. Alternatively, the barrier may be intermixed with an outer portion of the first layer. The barrier material is biocompatible, and typically has a thickness ranging from about 50 angstroms to about 20,000 microns. Suitable materials for the barrier include, but are not limited to, inorganic compounds, such as inorganic silicides, oxides, nitrides, carbides, as well as pure metals such as aluminum, chromium, gold, hafnium, iridium, niobium, palladium, platinum, tantalum, titanium, tungsten, zirconium, and alloys of these metals. The barriers disclosed may be applied to the first layer by several techniques, depending on the material being applied. Exemplary deposition techniques include physical vapor deposition, alkoxide hydrolysis, and electroless plating.

The implantable device may be a stent or a graft, among other possibilities.